




Russ B. Altman

Kenneth Fong Professor and Professor of Bioengineering, of Genetics, of Medicine (General Medical Discipline), of Biomedical Data Science and, by courtesy, of Computer Science

 NIH Biosketch available Online

 Curriculum Vitae available Online

CONTACT INFORMATION

• Alternate Contact

Tiffany Murray - Administrative Associate

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Tel 650-725-0659

Bio

BIO

Russ Biagio Altman is the Kenneth Fong Professor of Bioengineering, Genetics, Medicine, Biomedical Data Science and (by courtesy) Computer Science) and past chairman of the Bioengineering Department at Stanford University. His primary research interests are in the application of computing (AI, data science and informatics) to problems relevant to medicine. He is particularly interested in methods for understanding drug action at molecular, cellular, organism and population levels. His lab studies how human genetic variation impacts drug response (e.g., <http://www.pharmgkb.org/>). Other work focuses on the analysis of biological molecules to understand the actions, interactions and adverse events of drugs (e.g., <http://feature.stanford.edu/>). He helps lead an FDA-supported Center of Excellence in Regulatory Science & Innovation.

Dr. Altman holds an AB from Harvard College, and an MD from Stanford Medical School, and a PhD in Medical Information Sciences from Stanford. He received the U.S. Presidential Early Career Award for Scientists and Engineers and a National Science Foundation CAREER Award. He is a fellow of the American College of Physicians (ACP), the American College of Medical Informatics (ACMI), the American Institute of Medical and Biological Engineering (AIMBE), and the American Association for the Advancement of Science (AAAS). He is a member of the National Academy of Medicine (formerly the Institute of Medicine, IOM). He is a past-president, founding board member, and a fellow of the International Society for Computational Biology (ISCB), and a past-president of the American Society for Clinical Pharmacology & Therapeutics (ASCPT). He has chaired the Science Board advising the FDA commissioner, and has served on the NIH Director's Advisory Committee, and as cochair of the IOM Drug Forum. He is an organizer of the annual Pacific Symposium on Biocomputing, and a founder of Personalis (NASDAQ: PSNL). Dr. Altman is board certified in Internal Medicine and in Clinical Informatics. He received the Stanford Medical School graduate teaching award in 2000 and mentorship award in 2014. He is the founding editor of the Annual Reviews of Biomedical Data Science, and hosts a SiriusXM radioshow (and podcast) entitled "The Future of Everything."

ACADEMIC APPOINTMENTS

- Professor, Bioengineering
- Professor, Genetics
- Professor, Medicine - Biomedical Informatics Research
- Professor, Biomedical Data Science

- Professor (By courtesy), Computer Science
- Member, Bio-X
- Member, Cardiovascular Institute
- Associate Director, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Faculty Director, SPADA (Stanford Predictives & Diagnostics Accelerator), (2016- present)
- Faculty Director, 100 Year Study of Artificial Intelligence, (2015- present)
- Associate Director, Human-Centered Artificial Intelligence Institute, (2018- present)
- Member, Biomedical Library and Informatics Research Committee Study Section (NIH), (2002-2005)
- President, International Society for Computational Biology, (2000-2001)
- President, American Society for Clinical Pharmacology and Therapeutics, (2013-2014)
- Director, Biomedical Informatics Training Program, (2000-2018)
- Chairman, Department of Bioengineering, (2007-2012)
- Chair, FDA Science Board, (2013-2014)
- Member, Advisory Committee to the Director (ACD), NIH, (2013-2016)

HONORS AND AWARDS

- Teaching Honor Roll, Tau Beta Pi (2020)
- Excellence in Graduate Teaching Award, Stanford Biosciences (2020)
- Fellow, American Association for the Advancement of Science (2014)
- Stanford Medical School Mentorship Award, Stanford Medical School (2014)
- Fellow, International Society for Computational Biology (2010)
- Member, Institute of Medicine of the National Academies (2009)
- Fellow, American Institute for Medical and Biological Engineering (2007)
- Award for Excellence in Graduate Teaching, Stanford Medical School (2000)
- Fellow, American College of Medical Informatics (1998)
- Fellow, American College of Physicians (1998)
- U.S. Presidential Early Career Award for Scientists & Engineers, NIH (1997)
- Post-Doctoral Fellowship, Howard Hughes Medical Institute (1991)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Co-Founder, Personalis.com (2013 - present)
- Editor-in-Chief, Annual Reviews of Biomedical Data Science (2016 - present)
- Board of Directors, YouScript.com (2018 - present)
- Advisor, Vanderbilt University Medical School (2014 - present)
- Advisor, NIH Advisory Committee to the Director (ACD) (2013 - 2017)
- Member, FDA Commissioner Science Board (2011 - 2014)

- Co-Organizer, Pacific Symposium on Biocomputing (psb.stanford.edu) (1995 - present)

PROGRAM AFFILIATIONS

- Symbolic Systems Program

PROFESSIONAL EDUCATION

- AB, Harvard College , Biochemistry & Molecular Biology (1983)
- PhD, Stanford University , Medical Information Sciences (1989)
- MD, Stanford University , Medicine (1990)

COMMUNITY AND INTERNATIONAL WORK

- Host, "The Future of Everything with Russ Altman" SiriusXM 121
- Physician, Pharmacogenomics Consult Service, Stanford Clinics, CA

PATENTS

- Nicholas Tatonetti, Russ B. Altman, Guy Haskin Fernald. "United States Patent 9305267 Signal detection algorithms to identify drug effects and drug interactions", The Board of Trustees of the Leland Stanford Junior University, Apr 5, 2016
- Kathleen A. Thompson, Russ B. Altman, Oliver M. Duschka. "United States Patent 6178416 Method and apparatus for knowledgebase searching", Jan 23, 2001
- Ramon M. Felciano, Russ B. Altman. "United States Patent 6052730 Method for monitoring and/or modifying web browsing sessions", The Board of Trustees of the Leland Stanford Junior University, Apr 18, 2000

LINKS

- Helix Group Website: <http://helix.stanford.edu>
- Personal home page: <https://rbaltman.people.stanford.edu>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I am interested in the application of computational technologies to problems in molecular biology of relevance to medicine. In particular, my laboratory focuses on drug response at the molecular level, working in three areas. First, we are building a comprehensive pharmacogenomics knowledge base (<http://www.pharmgkb.org/>) that provides access to information relating genotype to phenotype (in particular, how variation in genetics leads to variation in response to drugs). We are interested in collaboratively discovering and applying new pharmacogenomics knowledge. Second, we are interested in the analysis of three dimensional biological structures. We have methods for analyzing protein structures to recognize and annotate active sites and binding sites, particularly in the context of interactions with small molecule drugs. We are also interested in physics-based simulation of biological structures to understand how their dynamics impact their function (<http://simbios.stanford.edu/>). Finally, we are interested in computational methods for analyzing functional genomics information. We use natural language processing techniques for extracting and summarizing information in the literature, chemoinformatics methods for understanding small molecule function, and machine learning & data mining techniques to understand the molecular responses to drugs.

Teaching

COURSES

2020-21

- Principles of Pharmacogenomics: BIOMEDIN 224, GENE 224 (Aut, Win, Sum)
- Representations and Algorithms for Computational Molecular Biology: BIOE 214, BIOMEDIN 214, CS 274, GENE 214 (Aut)
- Representations and Algorithms for Molecular Biology: Lectures: BIOMEDIN 216 (Aut)

2019-20

- Ethics in Bioengineering: BIOE 131, ETHICSOC 131X (Spr)
- Introduction to Biomedical Informatics Research Methodology: BIOE 212, BIOMEDIN 212, CS 272, GENE 212 (Spr)
- Principles of Pharmacogenomics: BIOMEDIN 224, GENE 224 (Aut, Win, Spr)
- Representations and Algorithms for Computational Molecular Biology: BIOE 214, BIOMEDIN 214, CS 274, GENE 214 (Aut)
- Representations and Algorithms for Molecular Biology: Lectures: BIOMEDIN 216 (Aut)

2018-19

- Ethics in Bioengineering: BIOE 131, ETHICSOC 131X (Spr)
- Frontiers in Reproductive Technology: CS 17SI (Spr)
- Introduction to Biomedical Informatics Research Methodology: BIOE 212, BIOMEDIN 212, CS 272, GENE 212 (Spr)
- Principles of Pharmacogenomics: BIOMEDIN 224, GENE 224 (Aut, Win, Spr, Sum)
- Representations and Algorithms for Computational Molecular Biology: BIOE 214, BIOMEDIN 214, CS 274, GENE 214 (Aut)
- Representations and Algorithms for Molecular Biology: Lectures: BIOMEDIN 216 (Aut)

2017-18

- Ethics in Bioengineering: BIOE 131, ETHICSOC 131X (Spr)
- Introduction to Biomedical Informatics Research Methodology: BIOE 212, BIOMEDIN 212, CS 272, GENE 212 (Spr)
- Principles of Pharmacogenomics: BIOMEDIN 224, GENE 224 (Aut, Win, Spr, Sum)
- Representations and Algorithms for Computational Molecular Biology: BIOE 214, BIOMEDIN 214, CS 274, GENE 214 (Aut)
- Representations and Algorithms for Molecular Biology: Lectures: BIOMEDIN 216 (Aut)

STANFORD ADVISEES

Med Scholar Project Advisor

Gustavo Chavez

Doctoral Dissertation Reader (AC)

Margaret Antonio, Salil Bhate, Brianna Chrisman, Alex Chu, Scott Longwell, Katherine McNamara, Ragini Phansalkar, Gabe Reder, Raphael Townshend, Artem Trotsyuk, Peter Washington

Postdoctoral Faculty Sponsor

Jake Lever

Doctoral Dissertation Advisor (AC)

Binbin Chen, Alex Derry, E Flynn, Adam Lavertu, Greg McInnes, Dan Sosa, Lu Yang

Orals Evaluator

Raphael Townshend

Doctoral Dissertation Co-Advisor (AC)

Hunter Boyce, Margaret Guo

Master's Program Advisor

Jerry Meng, Andrew Semelhago

Doctoral (Program)

Rocky Aikens, Erin Craig, Amalia Hadjithodorou, Kwangeun Jang, Daniel Kim, Erica Schwarz, Artem Trotsyuk

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (Phd Program)
- Biomedical Informatics (Masters Program)
- Biomedical Informatics (Phd Program)
- Biophysics (Phd Program)
- Genetics (Phd Program)

Publications

PUBLICATIONS

- **Distinct clinical phenotypes for Crohn's disease derived from patient surveys.** *BMC gastroenterology*
Liu, T., Han, L., Tilley, M., Afzelius, L., Maciejewski, M., Jelinsky, S., Tian, C., McIntyre, M., 23andMe Research Team, Bing, N., Hung, K., Altman, R. B., Agee, M., et al
2021; 21 (1): 160
- **Opportunities and challenges for the computational interpretation of rare variation in clinically important genes.** *American journal of human genetics*
McInnes, G., Sharo, A. G., Koleske, M. L., Brown, J. E., Norstad, M., Adhikari, A. N., Wang, S., Brenner, S. E., Halpern, J., Koenig, B. A., Magnus, D. C., Gallagher, R. C., Giacomini, et al
2021; 108 (4): 535–48
- **Large-scale labeling and assessment of sex bias in publicly available expression data.** *BMC bioinformatics*
Flynn, E., Chang, A., Altman, R. B.
2021; 22 (1): 168
- **Search and visualization of gene-drug-disease interactions for pharmacogenomics and precision medicine research using GeneDive.** *Journal of biomedical informatics*
Wong, M., Previde, P., Cole, J., Thomas, B., Laxmeshwar, N., Mallory, E., Lever, J., Petkovic, D., Altman, R. B., Kulkarni, A.
2021: 103732
- **Modeling drug response using network-based personalized treatment prediction (NetPTP) with applications to inflammatory bowel disease.** *PLoS computational biology*
Han, L., Sayyid, Z. N., Altman, R. B.
2021; 17 (2): e1008631
- **A New Era in Pharmacovigilance: Towards real world data and digital monitoring.** *Clinical pharmacology and therapeutics*
Lavertu, A., Vora, B., Giacomini, K. M., Altman, R., Rensi, S.
2021
- **Repurposing Biomedical Informaticians for COVID-19.** *Journal of biomedical informatics*
Sosa, D. N., Chen, B., Kaushal, A., Lavertu, A., Lever, J., Rensi, S., Altman, R.
2021: 103673
- **Drug Response Pharmacogenetics for 200,000 UK Biobank Participants.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
McInnes, G. n., Altman, R. B.
2021; 26: 184–95
- **Pharmacogenetics at Scale: An Analysis of the UK Biobank.** *Clinical pharmacology and therapeutics*
McInnes, G., Lavertu, A., Sangkuhl, K., Klein, T. E., Whirl-Carrillo, M., Altman, R. B.
2020
- **Transfer learning enables prediction of CYP2D6 haplotype function.** *PLoS computational biology*
McInnes, G., Dalton, R., Sangkuhl, K., Whirl-Carrillo, M., Lee, S., Tsao, P. S., Gaedigk, A., Altman, R. B., Woodahl, E. L.
2020; 16 (11): e1008399
- **OrderRex clinical user testing: a randomized trial of recommender system decision support on simulated cases.** *Journal of the American Medical Informatics Association : JAMIA*

- Kumar, A., Aikens, R. C., Hom, J., Shieh, L., Chiang, J., Morales, D., Saini, D., Musen, M., Baiocchi, M., Altman, R., Goldstein, M. K., Asch, S., Chen, et al
2020
- **MARS: discovering novel cell types across heterogeneous single-cell experiments.** *Nature methods*
Brbic, M., Zitnik, M., Wang, S., Pisco, A. O., Altman, R. B., Darmanis, S., Leskovec, J.
2020
 - **PharmGKB tutorial for pharmacogenomics of drugs potentially used in the context of COVID-19.** *Clinical pharmacology and therapeutics*
Huddart, R., Whirl-Carrillo, M., Altman, R. B., Klein, T. E.
2020
 - **Sex-specific genetic effects across biomarkers.** *European journal of human genetics : EJHG*
Flynn, E., Tanigawa, Y., Rodriguez, F., Altman, R. B., Sinnott-Armstrong, N., Rivas, M. A.
2020
 - **Scientific considerations for global drug development.** *Science translational medicine*
Wilson, J. L., Cheung, K. W., Lin, L., Green, E. A., Porras, A. I., Zou, L., Mukanga, D., Akpa, P. A., Darko, D. M., Yuan, R., Ding, S., Johnson, W. C., Lee, et al
2020; 12 (554)
 - **Gaussian embedding for large-scale gene set analysis** *NATURE MACHINE INTELLIGENCE*
Wang, S., Flynn, E. R., Altman, R. B.
2020; 2 (7): 387–95
 - **PharmGKB summary: lamotrigine pathway, pharmacokinetics and pharmacodynamics.** *Pharmacogenetics and genomics*
Mitra-Ghosh, T., Callisto, S. P., Lamba, J. K., Remmel, R. P., Birnbaum, A. K., Barbarino, J. M., Klein, T. E., Altman, R. B.
2020
 - **Pathway and network embedding methods for prioritizing psychiatric drugs.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Pershad, Y. n., Guo, M. n., Altman, R. B.
2020; 25: 671–82
 - **Variant Interpretation in Current Pharmacogenetic Testing.** *Journal of personalized medicine*
Luvsantseren, S. n., Whirl-Carrillo, M. n., Sangkuhl, K. n., Shin, N. n., Wen, A. n., Empey, P. n., Alam, B. n., David, S. n., Dunnenberger, H. M., Orlando, L. n., Altman, R. n., Palaniappan, L. n.
2020; 10 (4)
 - **Gaussian Embedding for Large-scale Gene Set Analysis.** *Nature machine intelligence*
Wang, S. n., Flynn, E. R., Altman, R. B.
2020; 2 (7): 387–95
 - **Geographic Distribution of US Cohorts Used to Train Deep Learning Algorithms.** *JAMA*
Kaushal, A. n., Altman, R. n., Langlotz, C. n.
2020; 324 (12): 1212–13
 - **Extending TextAE for annotation of non-contiguous entities.** *Genomics & informatics*
Lever, J. n., Altman, R. n., Kim, J. D.
2020; 18 (2): e15
 - **Genome-wide association study of platelet reactivity and cardiovascular response in patients treated with clopidogrel: a study by the International Clopidogrel Pharmacogenomics Consortium (ICPC).** *Clinical pharmacology and therapeutics*
Verma, S. S., Bergmeijer, T. O., Gong, L. n., Reny, J. L., Lewis, J. P., Mitchell, B. D., Alexopoulos, D. n., Aradi, D. n., Altman, R. B., Bliden, K. n., Bradford, Y. n., Campo, G. n., Chang, et al
2020
 - **Extracting chemical reactions from text using Snorkel.** *BMC bioinformatics*
Mallory, E. K., de Rochemonteix, M. n., Ratner, A. n., Acharya, A. n., Re, C. n., Bright, R. A., Altman, R. B.
2020; 21 (1): 217
 - **Classifying non-small cell lung cancer types and transcriptomic subtypes using convolutional neural networks.** *Journal of the American Medical Informatics Association : JAMIA*
Yu, K. H., Wang, F. n., Berry, G. J., Ré, C. n., Altman, R. B., Snyder, M. n., Kohane, I. S.

2020; 27 (5): 757–69

- **Pharmacogenomics in Asian subpopulations and impacts on commonly prescribed medications.** *Clinical and translational science*
Lo, C. n., Nguyen, S. n., Yang, C. n., Witt, L. n., Wen, A. n., Liao, T. V., Nguyen, J. n., Lin, B. n., Altman, R. B., Palaniappan, L. n.
2020
- **A Literature-Based Knowledge Graph Embedding Method for Identifying Drug Repurposing Opportunities in Rare Diseases.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Sosa, D. N., Derry, A. n., Guo, M. n., Wei, E. n., Brinton, C. n., Altman, R. B.
2020; 25: 463–74
- **PGxMine: Text mining for curation of PharmGKB.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Lever, J. n., Barbarino, J. M., Gong, L. n., Huddart, R. n., Sangkuhl, K. n., Whaley, R. n., Whirl-Carrillo, M. n., Woon, M. n., Klein, T. E., Altman, R. B.
2020; 25: 611–22
- **Wiring Minds Successfully applying AI to biomedicine requires innovators trained in contrasting cultures** *NATURE*
Kaushal, A., Altman, R. B.
2019; 576 (7787): S62–S63
- **PharmGKB summary: very important pharmacogene information for CACNA1S.** *Pharmacogenetics and genomics*
Sangkuhl, K., Dirksen, R. T., Alvarellos, M. L., Altman, R. B., Klein, T. E.
2019
- **PharmGKB summary: sertraline pathway, pharmacokinetics.** *Pharmacogenetics and genomics*
Huddart, R., Hicks, J. K., Ramsey, L. B., Strawn, J. R., Smith, D. M., Bobonis Babilonia, M., Altman, R. B., Klein, T. E.
2019
- **Maria-I: A Deep-Learning Approach for Accurate Prediction of MHC Class I Tumor Neoantigen Presentation**
Kathuria, K. R., Chen, B., Khodadoust, M. S., Olsson, N., Davis, M. M., Elias, J. E., Levy, R., Altman, R. B., Alizadeh, A. A.
AMER SOC HEMATOLOGY.2019
- **Retro-2 protects cells from ricin toxicity by inhibiting ASNA1-mediated ER targeting and insertion of tail-anchored proteins.** *eLife*
Morgens, D. W., Chan, C., Kane, A. J., Weir, N. R., Li, A., Dubreuil, M. M., Tsui, C. K., Hess, G. T., Lavertu, A., Han, K., Polyakov, N., Zhou, J., Handy, et al
2019; 8
- **Successfully applying AI to biomedicine requires innovators trained in contrasting cultures** *NATURE*
Kaushal, A., Altman, R. B.
2019; 574 (7779): S62–S63
- **RedMed: Extending drug lexicons for social media applications.** *Journal of biomedical informatics*
Lavertu, A., Altman, R. B.
2019: 103307
- **Atrial Fibrillation Burden Signature and Near-Term Prediction of Stroke: A Machine Learning Analysis.** *Circulation. Cardiovascular quality and outcomes*
Han, L., Askari, M., Altman, R. B., Schmitt, S. K., Fan, J., Bentley, J. P., Narayan, S. M., Turakhia, M. P.
2019; 12 (10): e005595
- **Pharmacogenomic Polygenic Response Score Predicts Ischemic Events and Cardiovascular Mortality in Clopidogrel-Treated Patients.** *European heart journal. Cardiovascular pharmacotherapy*
Lewis, J. P., Backman, J. D., Reny, J., Bergmeijer, T. O., Mitchell, B. D., Ritchie, M. D., Dery, J., Pakyz, R. E., Gong, L., Ryan, K., Kim, E., Aradi, D., Fernandez-Cadenas, et al
2019
- **PharmGKB summary: methylphenidate pathway, pharmacokinetics/pharmacodynamics** *PHARMACOGENETICS AND GENOMICS*
Stevens, T., Sangkuhl, K., Brown, J. T., Altman, R. B., Klein, T. E.
2019; 29 (6): 136–54
- **Pharmacogenomics Clinical Annotation Tool (PharmCAT).** *Clinical pharmacology and therapeutics*
Sangkuhl, K., Whirl-Carrillo, M., Whaley, R. M., Woon, M., Lavertu, A., Altman, R. B., Carter, L., Verma, A., Ritchie, M. D., Klein, T. E.
2019

- **PharmGKB summary: Ondansetron and tropisetron pathways, pharmacokinetics and pharmacodynamics** *PHARMACOGENETICS AND GENOMICS*
Huddart, R., Altman, R. B., Klein, T. E.
2019; 29 (4): 91–97
- **Effect of CYP4F2, VKORC1, and CYP2C9 in Influencing Coumarin Dose: A Single-Patient Data Meta-Analysis in More Than 15,000 Individuals** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
Danese, E., Raimondi, S., Montagnana, M., Tagetti, A., Langae, T., Borgiani, P., Ciccacci, C., Carcas, A. J., Borobia, A. M., Tong, H. Y., Davila-Fajardo, C., Botton, M., Bourgeois, et al
2019; 105 (6): 1477–91
- **Predicting venous thromboembolism risk from exomes in the Critical Assessment of Genome Interpretation (CAGI) challenges.** *Human mutation*
McInnes, G., Daneshjou, R., Katsonis, P., Lichtarge, O., Srinivasan, R. G., Rana, S., Radivojac, P., Mooney, S. D., Pagel, K. A., Stamboulian, M., Jiang, Y., Capriotti, E., Wang, et al
2019
- **High precision protein functional site detection using 3D convolutional neural networks.** *Bioinformatics (Oxford, England)*
Torng, W., Altman, R. B.
2019; 35 (9): 1503–12
- **Standardized Biogeographic Grouping System for Annotating Populations in Pharmacogenetic Research** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
Huddart, R., Fohner, A. E., Whirl-Carrillo, M., Wojcik, G. L., Gignoux, C. R., Popejoy, A. B., Bustamante, C. D., Altman, R. B., Klein, T. E.
2019; 105 (5): 1256–62
- **PharmGKB summary: methylphenidate pathway, pharmacokinetics/pharmacodynamics.** *Pharmacogenetics and genomics*
Stevens, T., Sangkuhl, K., Brown, J. T., Altman, R. B., Klein, T. E.
2019
- **Research Projects Supported by the University of California, San Francisco-Stanford Center of Excellence in Regulatory Science and Innovation** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
Giacomini, K. M., Lin, L., Altman, R. B.
2019; 105 (4): 815–18
- **Pocket similarity identifies selective estrogen receptor modulators as microtubule modulators at the taxane site** *NATURE COMMUNICATIONS*
Lo, Y., Cormier, O., Liu, T., Nettles, K. W., Katzenellenbogen, J. A., Stearns, T., Altman, R. B.
2019; 10
- **Pharmacogenomics in dermatology: tools for understanding gene-drug associations.** *Seminars in cutaneous medicine and surgery*
Daneshjou, R., Huddart, R., Klein, T. E., Altman, R. B.
2019; 38 (1): E19–E24
- **Research Projects Supported by the University of California, San Francisco-Stanford Center of Excellence in Regulatory Science and Innovation.** *Clinical pharmacology and therapeutics*
Giacomini, K. M., Lin, L., Altman, R. B.
2019
- **PharmGKB summary: Ondansetron and tropisetron pathways, pharmacokinetics and pharmacodynamics.** *Pharmacogenetics and genomics*
Huddart, R., Altman, R. B., Klein, T. E.
2019
- **Computational analysis of kinase inhibitor selectivity using structural knowledge** *BIOINFORMATICS*
Lo, Y., Liu, T., Morrissey, K. M., Kakiuchi-Kiyota, S., Johnson, A. R., Broccatelli, F., Zhong, Y., Joshi, A., Altman, R. B.
2019; 35 (2): 235–42
- **The association of obesity and coronary artery disease genes with response to SSRIs treatment in major depression.** *Journal of neural transmission (Vienna, Austria : 1996)*
Amare, A. T., Schubert, K. O., Tekola-Ayele, F., Hsu, Y., Sangkuhl, K., Jenkins, G., Whaley, R. M., Barman, P., Batzler, A., Altman, R. B., Arolt, V., Brockmoller, J., Chen, et al
2019
- **Pocket similarity identifies selective estrogen receptor modulators as microtubule modulators at the taxane site.** *Nature communications*

- Lo, Y. C., Cormier, O. n., Liu, T. n., Nettles, K. W., Katzenellenbogen, J. A., Stearns, T. n., Altman, R. B.
2019; 10 (1): 1033
- **A deep learning framework to predict binding preference of RNA constituents on protein surface.** *Nature communications*
Lam, J. H., Li, Y. n., Zhu, L. n., Umarov, R. n., Jiang, H. n., Héliou, A. n., Sheong, F. K., Liu, T. n., Long, Y. n., Li, Y. n., Fang, L. n., Altman, R. B., Chen, et al
2019; 10 (1): 4941
 - **Graph Convolutional Neural Networks for Predicting Drug-Target Interactions.** *Journal of chemical information and modeling*
Torng, W. n., Altman, R. B.
2019
 - **Predicting HLA class II antigen presentation through integrated deep learning.** *Nature biotechnology*
Chen, B. n., Khodadoust, M. S., Olsson, N. n., Wagar, L. E., Fast, E. n., Liu, C. L., Muftuoglu, Y. n., Sworder, B. J., Diehn, M. n., Levy, R. n., Davis, M. M., Elias, J. E., Altman, et al
2019
 - **Examining the Use of Real-World Evidence in the Regulatory Process.** *Clinical pharmacology and therapeutics*
Beaulieu-Jones, B. K., Finlayson, S. n., Yuan, W. n., Altman, R. B., Kohane, I. S., Prasad, V. n., Yu, K. H.
2019
 - **#Science: The potential and the challenges of utilizing social media and other electronic communication platforms in health care.** *Clinical and translational science*
Gijssen, V. n., Maddux, M. n., Lavertu, A. n., Gonzalez-Hernandez, G. n., Ram, N. n., Reeves, B. n., Robinson, T. n., Ziesenitz, V. n., Shakhnovich, V. n., Altman, R. n.
2019
 - **Essential Characteristics of Pharmacogenomics Study Publications** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
Thorn, C. F., Whirl-Carrillo, M., Hachad, H., Johnson, J. A., McDonagh, E. M., Ratain, M. J., Relling, M. V., Scott, S. A., Altman, R. B., Klein, T. E.
2019; 105 (1): 86–91
 - **The association of obesity and coronary artery disease genes with response to SSRIs treatment in major depression** *JOURNAL OF NEURAL TRANSMISSION*
Amare, A. T., Schubert, K., Tekola-Ayele, F., Hsu, Y., Sangkuhl, K., Jenkins, G., Whaley, R. M., Barman, P., Batzler, A., Altman, R. B., Arolt, V., Brockmoeller, J., Chen, et al
2019; 126 (1): 35–45
 - **PathFXweb: a web application for identifying drug safety and efficacy phenotypes.** *Bioinformatics (Oxford, England)*
Wilson, J. L., Wong, M. n., Chalke, A. n., Stepanov, N. n., Petkovic, D. n., Altman, R. B.
2019
 - **The effect of CYP4F2, VKORC1 and CYP2C9 in influencing coumarin dose. A single patient data meta-analysis in more than 15,000 individuals.** *Clinical pharmacology and therapeutics*
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PRESENTATIONS

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